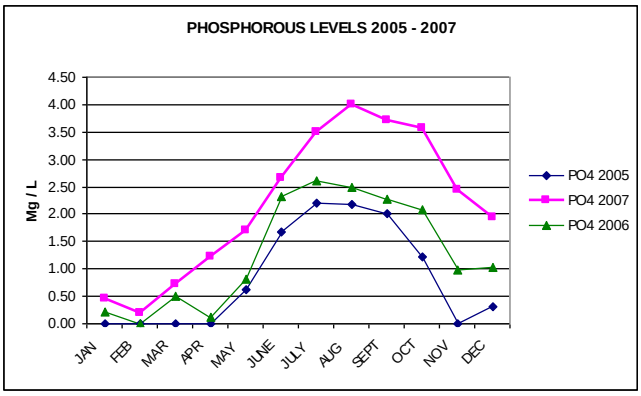
NUTRIENT LOAD

Aquatic Plants / Water Quality	**Nutrient Loading and Lake Effect**

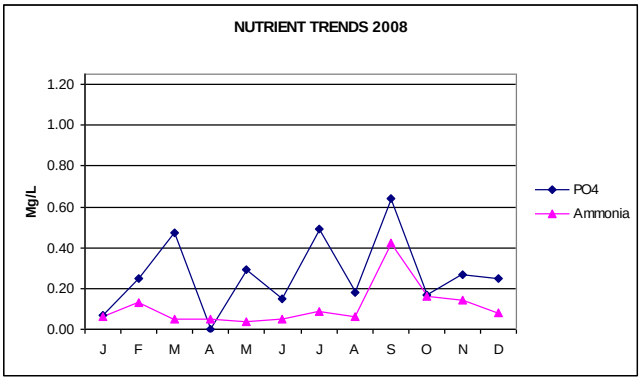
Description: In freshwater lakes and ponds nutrients, usually phosphorous, sets the maximum limit of plant productivity and the overall character of a water feature. Nutrients may be present in a pond as either internal or external nutrients or a combination of both. Internal nutrients are those nutrients already in the lake or that are released from the bottom sediments. External nutrients typically come from the watershed, often as a result of fertilizer runoff.

Examples of Internal and External Nutrient Loading



Leisure Ponds data from a golf course lake indicate very high phosphorous internal loading as phosphorous is released from bottom sediments as the water warms each summer.

The data also indicates rapid yearly aging or lake secession, and an advanced rate of eutrophication and tropic index level



In this example Leisure Ponds data indicates an external nutrient spike in both phosphorous and nitrogen during the month of September, a common fertilizer application time for our area.

The high nutrient levels also resulted in a corresponding blue-green algae bloom and an unsightly and smelly lake.

Corresponding Oscillatoria Algal Bloom 9-2008

Note: Unfortunately this subdivision has no direct control of the watershed where the fertilizer came from.

Related Concepts

LIEBIG'S LAW OF THE MINIMUM: Plant growth is controlled by the nutrient in smallest supply related to the needs of the plant.
EUTROPHICATION: The physical, chemical, and biological aging process of a lake that results in increases in nutrients, organic mater, and sedimentation.
LAKE SUCCESSION: The natural progressive change in the plant and animal community within a lake. Over time all lakes fill with sediment and dead plant and animal material until there is no longer standing water. Although the process may take 100's of years in natural environments, in urban areas the process can be greatly accelerated.
TROPIC INDEX: The ranking of a lake as oligotropic, mesotropic, eutrophic, hypereutrophic indicating relative succession age.